

## REMARKS

Reconsideration for the above-identified application is requested. Claims 7, 14, 19, 27, 31, 35, 38, 40, 43, 48, and 49 have been amended, and Claim 44 has been canceled. Accordingly, Claims 1-43, and 45-49 remain pending in the present application. Applicants acknowledge with appreciation that Claims 16, 29, 30, 34, 41, 42, and 47 contain allowable subject matter.

Claims 1-13, 15, 17-22, 24, 26-28, 31, 33, 35, 37-39, 48, and 49 were rejected in an August 4, 2003 Office Action (hereinafter "Office Action"), under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,545,232B1 issued to Huo-Lu (hereinafter "Huo-Lu") in view of U.S. Patent No. 4,551,598, issued to Hamilton et al. (hereinafter "Hamilton") and U.S. Patent No. 4,078,257, issued to Bagley (hereinafter "Bagley"). Claims 1, 3, 5, 6, 14, 19, 20, 22, 23, 25, 31, 32, 36, 38-40, 43-46, 48, and 49 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,612,692, issued to Dugas et al. (hereinafter "Dugas") in view of Hamilton and Bagley. Claims 7, 14, 27, 35, 43, and 49 were rejected under 35 U.S.C. § 112, second paragraph as being indefinite. Applicants respectfully assert that the present application is condition for allowance. The reasons why applicants believe the present application is in condition for allowance are discussed in detail below, following a brief description of the cited prior art.

### Huo-Lu

Huo-Lu purportedly teaches a thin-type light permeable keyboard that comprises a plurality of keys 10, a plurality of bridge structures 20, a frame board 30, a luminescence board 40, a film circuit board 50, and a baseboard 60. The keys 10 are movably connected to the frame board 30 via the bridge structures 20. The frame board 30 is a light permeable frame board defining a plurality of openings 35. The frame board 30 is supported on the film circuit

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board 50 and baseboard 60. A luminescence board 40 is disposed between the film circuit board 50 and the frame board 30. The luminescence board 40 is a film-shaped luminous member that illuminates the frame board 30 and keys 10 with an even distribution of light. The keyboard further includes a plurality of elastic members 38 disposed in the openings 35 of the frame board 30. The tops of the elastic members 38 contact the bottom faces of the respective keys 10 and the bottom ends of the elastic members 38 are bonded to the luminescence board 40. Each elastic member 38 contains a press post that may be pressed downward to conduct the film circuit board 50. In operation, the luminescence board 40 provides a uniform dispersion of light for backlighting the keys 10. See FIGURE 2, Column 2, lines 17-30, and Column 3, lines 9-16 and lines 30-41.

#### Dugas

Dugas is purportedly directed to a full travel, sealed, fully backlit keyboard. The keyboard 10 includes individually movable keys 16, a membrane 20, spacer board 22, and a mother PC board 24. The spacer board 22 is supported on the mother PC board 24, and includes a plurality of openings 42. Mounted to the PC board 24 and disposed within each opening 42 are two LEDs. The LEDs are arranged on either side of a land 78. The membrane 20 is supported by the spacer 22 and includes a plurality of domes 32, one dome 32 being associated with each key 16. Each dome 32 is a flexible member that includes a projection 74 having an electrically conductive surface 76 disposed at its end for contacting the land 78 to generate a signal. Each key 16 includes an upper surface 48 having light transparent regions, is supported by the associated dome 32, and is guided between a depressed and non-depressed position via a key support member. Dugas expressly teaches that the LEDs 44 are low profile LEDs which provide a low-intensity light suitable for backlighting, and that two LEDs 44 are provided for each

key 16 to create the desired uniformity and intensity of illumination. See FIGURE 4, and Column 3, line 49 through Column 5, line 21.

#### Hamilton

Hamilton is directed to an illuminated membrane switch. The switch 10 purportedly includes a case or housing 11, a rectangular clear plastic back plate 12, a membrane sub-switch assembly 13, and a rectangular grid plate 14. The membrane switch sub-assembly 13 is mounted on the translucent back plate 12 and includes a plurality of switches 31. Each switch 31 includes a flexible top membrane film 32, an apertured spacer membrane film 33, and a flexible bottom membrane film 34. The top and bottom membrane films 32 and 34 include opaque conductors deposited thereon. The grid plate 14 overlays the membrane switch sub-assembly 13. The grid plate 14 includes a plurality of apertures 56, one aperture associated with each switch 31. A plurality of actuator keys 58 are disposed in the grid plate apertures 56 for actuating the plurality of switches 31. At the bottom of the housing 11, there is mounted a single bulb unit 28 for providing backlighting to the actuator keys 58. The bulb unit 28 is mounted a specific distance from the back plate 12 such that the bulb unit 28 evenly floods the rear surface thereof with light. See FIGURES 3 and 4, and Column 3, line 40 through Column 5, line 39.

#### Bagley

Bagley is directed to a calculator apparatus having electronically alterable key symbols. The calculator 11 includes a key board 13 that comprises an opaque portion 25 and a transparent-key portion 27. The transparent key portion 27 includes an opaque portion 29 and a matrix of apertures 31. A layer of transparent plastic material 33 fills the apertures 31 to form transparent keys 35. Mounted below the keys 35 is a membrane switch composed of an insulator layer 39 sandwiched between top and bottom transparent plastic layers 37 and 41. The insulator layer 39 comprises a matrix of windows 49 that are associated with the keys 35. The layers 37 and 41

include uniformly-spaced transparent conductive strips 51 and 53. Mounted below the switch is a single plane 89 of transparent plastic material having a plurality of electric field zones 93. Each field zone 93 comprises a matrix of individual segments of liquid crystals or light emitting diodes (LEDs). The electric field zones 93 are used to produce an opaque or otherwise discernible image when viewed through the transparent keys 35. See FIGURE5, and Column 2, lines 30-63 and Column 5, lines 5-40.

#### Claim Rejections Under 35 U.S.C. § 112, Second Paragraph

Claims 7, 14, 27, 35, 43, and 49 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Accordingly, applicants have amended Claims 7, 14, 27, 35, 43, and 49 to overcome the rejections stated in paragraph 1 of the Office Action. Therefore, applicants respectfully request withdrawal of the pending rejections under 35 U.S.C. § 112, second paragraph, with regard to Claims 7, 14, 27, 35, 43, and 49.

#### Claim Rejections Under 35 U.S.C. § 103(a)

Claims 1-13, 15, 17-22, 24, 26-28, 31, 33, 35, 37-39, 48, and 49 stand rejected under 35 U.S.C. § 103(a), as being unpatentable over Huo-Lu in view of Hamilton and Bagley. Claims 1, 3, 5, 6, 14, 19, 20, 22, 23, 25, 31, 32, 36, 38-40, 43-46, 48, and 49 stand rejected under 35 U.S.C. § 103(a), as being unpatentable over Dugas in view of Hamilton and Bagley. Claim 44 has been canceled, thus rendering the rejection to this claim moot. Applicants respectfully traverse the rejections of the remaining claims.

#### Independent Claim 1

The Office Action contends that Huo-Lu teaches each and every element of Claim 1, except for disclosing a switch comprising an opaque member and an illumination source mounted to the base in alignment with the opaque member. The Office Action combines Huo-

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Lu with Hamilton, which purportedly teaches a switch formed by translucent layers having opaque electrical contacts formed as spaced-apart bars mounted to the translucent layers and an LED for back-lighting the key assembly, and Bagley, which purportedly teaches keys being backlit by a luminescent source mounted on a base behind a switch assembly, to arrive at applicants' claimed invention. Accordingly, the Office Action states that it would have been obvious to one of ordinary skill in the art to apply the teachings of Hamilton and Bagley to Huo-Lu for placing the illumination source and circuitry therefor on the base while forming the switch contacts with opaque members as taught by Hamilton for the purpose of more evenly distributing light over the entire surface to be illuminated, resulting in the removal of hot or bright spots on the key.

Applicants agree with the Office Action that Huo-Lu does not teach a switch having an opaque member and an illumination source mounted to a base in alignment with the opaque member. However, applicants respectfully assert there is no suggestion or motivation to modify Huo-Lu with Hamilton and Bagley, as proposed by the Office Action, to place the illumination source on the base while forming the switch contacts with opaque material.

As was discussed above, Huo-Lu teaches a luminescence board 40 of the film-type mounted in-between the circuit board 50 and the keys 10 for providing an evenly diffused field of light for backlighting the keys 10. Since the luminescence board of Huo-Lu provides an even distribution of light over the entire surface of the key, hot spots or bright spots do not occur. Because hot spots or bright spots do not form on the keys, applicants respectfully assert there is no suggestion or motivation to modify Huo-Lu with Bagley or Hamilton, as suggested in the Office Action, for the stated purpose of more evenly distributing light over the entire surface to be illuminated, resulting in the removal of hot or bright spots on the key. Thus, the requisite suggestion or motivation to combine these references is clearly lacking.

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Additionally, applicants respectfully assert there is no suggestion or motivation to combine Bagley with Hamilton. The Office Action contends that Bagley teaches a backlit key assembly in which the keys are backlit by a luminescent source. Applicants respectfully disagree with the Office Action's contention. Bagley does not teach backlighting keys, but instead purportedly teaches a matrix of lights that generate symbols that are viewable through transparent keys regardless of ambient light conditions. Further, Bagley expressly requires the use of transparent switch contacts so that the symbols generated by the matrix of lights are viewable through the transparent keys without obstruction. As such, Bagley expressly teaches away from being combined with Hamilton, which purportedly teaches opaque switch contacts. Thus, the requisite suggestion or motivation to combine these references is clearly lacking.

As a general rule, obviousness can only be established by combining or modifying the teachings of the prior to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 U.S.P.Q.2d 1941 (Fed. Cir. 1992). Applicants respectfully assert there is no teaching, suggestion, or motivation to combine Huo-Lu with Hamilton and Bagley to arrive at applicants' claimed invention. Therefore, for at least these reasons, applicants submit that a *prima facie* case of obviousness has not been established. Thus, applicants respectfully request the pending rejection of Claim 1 under 35 U.S.C. § 103 be withdrawn. Accordingly, applicants respectfully requests withdrawal of the pending rejections under 35 U.S.C. § 103(a) of Claims 2-13, 15, 17, and 18, which depend from allowable Claim 1.

With respect to the rejection of Claim 1 in view of the combination of Dugas, Hamilton and Bagley, the Office Action contends that Dugas teaches each and every element of Claim 1, except for disclosing a separate base below the circuit board for mounting the illumination

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source and a switch mounted above it comprising an opaque contact. The Office Action combines Dugas with Hamilton, which purportedly teaches a switch formed by translucent layers having opaque electrical contacts formed as spaced-apart bars mounted to the translucent layers and an LED for back-lighting the key assembly, and Bagley, which purportedly teaches keys being backlit by a luminescent source mounted on a base behind switch assembly, to arrive at applicants' claimed invention. Accordingly, the Office Action states that it would have been obvious to one of ordinary skill in the art to apply the teachings of Hamilton and Bagley to Dugas to place the illumination source and circuitry therefor on the base while forming the switch contacts with opaque members as taught by Hamilton for the purpose of for more evenly distributing the light over the entire surface to be illuminated, thereby removing a hot or bright spots on the key.

Applicants agree with the Office Action that Dugas does not teach a separate base below the circuit board for mounting the illumination source and a switch mounted above it comprising an opaque contact. However, applicants respectfully assert there is no suggestion or motivation to modify Dugas with Hamilton and Bagley, as proposed by the Office Action, to place the illumination source on the base while forming the switch contacts with opaque material.

As was discussed above, Dugas teaches a backlit key assembly having two low intensity LEDs 44 mounted on a circuit board 24 on either side of a switch land 78. At column 5, lines 9-17, Dugas expressly teaches that the use of two LEDs in the arrangement shown in FIGURE 4 provides the desired uniformity and intensity of illumination. Since Dugas expressly teaches a key assembly configuration that provides a desired uniformity and intensity of illumination without mounting one of the lights in alignment with a member of the switch, applicants respectfully assert there is no suggestion or motivation to modify Dugas with Bagley or Hamilton, as suggested in the Office Action, for the stated purpose of more evenly distributing

light over the entire surface to be illuminated, resulting in the removal of hot or bright spots on the key. Thus, the requisite suggestion or motivation to combine these references is clearly lacking.

Additionally, applicants respectfully assert there is no suggestion or motivation to combine Bagley with Hamilton. The Office Action contends that Bagley teaches a backlit key assembly in which the keys are backlit by a luminescent source. Applicants respectfully disagree with the Office Action's contention. Bagley does not teach backlighting keys, but instead purportedly teaches a matrix of lights that generate symbols that are viewable through transparent keys regardless of ambient light conditions. Further, Bagley expressly requires the use of transparent switch contacts so that the symbols generated by the matrix of lights are viewable through the transparent keys without obstruction. As such, Bagley expressly teaches away from being combined with Hamilton, which purportedly teaches opaque switch contacts. Thus, the requisite suggestion or motivation to combine these references is clearly lacking.

Applicants respectfully assert there is no suggestion or motivation to combine Dugas with Hamilton and Bagley to arrive at applicants' claimed invention. Specifically, to arrive at applicants' invention by combining the cited references as proposed by the Office Action, the Office Action is committing impermissible hindsight reasoning to reject pending Claim 1. Therefore, for at least these reasons, applicants submit that a *prima facie* case of obviousness has not been established. Thus, applicants respectfully request the pending rejection of Claim 1 under 35 U.S.C. § 103 be withdrawn. Accordingly, applicants respectfully requests withdrawal of the pending rejections under 35 U.S.C. § 103(a) of Claims 3, 5, 6, and 14, which depend from allowable Claim 1.

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#### Independent Claim 19

Amended Claim 19 recites a backlit key assembly including a key, a base, a key support structure that supports the key, a switch having an opaque portion, and a light source in substantial alignment with the opaque portion of the switch. For the same reasons as discussed above with respect to Claim 1, applicants assert there is no suggestion or motivation to combine the cited references to arrived at applicants claimed combination of features. Therefore, for at least these reasons, applicants assert that a *prima facie* case of obviousness has not been established. Accordingly, applicants respectfully request the pending rejection of Claim 19, under 35 U.S.C. § 103(a) be withdrawn. Applicants further request the withdrawal of the pending rejections of Claims 20-28, which depend from allowable Claim 19.

#### Independent Claim 31

Amended Claim 31 recites a backlit key assembly including a key, base means, a key support means, a switch means including an opaque member, and illumination means mounted in substantial alignment with the opaque member of the switch means. For the same reasons as discussed above with respect to Claim 1, applicants assert there is no suggestion or motivation to combine the cited references to arrived at applicants claimed combination of features. Therefore, for at least these reasons, applicants assert that a *prima facie* case of obviousness has not been established. Accordingly, applicants respectfully request the pending rejection of Claim 31, under 35 U.S.C. § 103(a) be withdrawn. Applicants further request the withdrawal of the pending rejections of Claims 32, 33, and 35-37, which depend from allowable Claim 31.

#### Independent Claim 38

Amended Claim 38 recites an improved backlit key assembly wherein the switch includes an opaque member, and wherein the light source is disposed in substantial alignment with the opaque member. For the same reasons as discussed above with respect to Claim 1, applicants

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assert there is no suggestion or motivation to combine the cited references to arrived at applicants claimed combination of features. Therefore, for at least these reasons, applicants assert that a *prima facie* case of obviousness has not been established. Accordingly, applicants respectfully request the pending rejection of Claim 38 under 35 U.S.C. § 103(a) be withdrawn. Applicants further request the withdrawal of the pending rejection of Claim 39, which depends from allowable Claim 38.

#### Independent Claim 40

Amended Claim 40 recites a backlit key assembly including a key, a circuit board, a key support structure that slideably receives the key, an actuation layer including a first electrical contact, a switch layer including a second electrical contact, and an illumination source disposed in substantial alignment with the first and second contacts. For the same reasons as discussed above with respect to Claim 1, applicants assert there is no suggestion or motivation to combine the cited references to arrived at applicants claimed combination of features. Therefore, for at least these reasons, applicants assert that a *prima facie* case of obviousness has not been established. Accordingly, applicants respectfully request the pending rejection of Claim 40 under 35 U.S.C. § 103(a) be withdrawn. Applicants further request the withdrawal of the pending rejections of Claims 43, 45, and 46, which depend from allowable Claim 40.

#### Independent Claim 48

Amended Claim 48 recites a backlit key assembly including a key, a base, a key support structure, a switch having an electrical contact, and a light source in substantial alignment with the electrical contact. For the same reasons as discussed above with respect to Claim 1, applicants assert there is no suggestion or motivation to combine the cited references to arrived at applicants claimed combination of features. Therefore, for at least these reasons, applicants

assert that a *prima facie* case of obviousness has not been established. Accordingly, applicants respectfully request the pending rejection of Claim 48 under 35 U.S.C. § 103(a) be withdrawn.

#### Independent Claim 49

Amended Claim 49 recites a backlit key assembly including a key, a base, a key support structure that supports the key, a switch having an electrical contact, and an illumination source disposed in substantial alignment with the electrical contact. For the same reasons as discussed above with respect to Claim 1, applicants assert there is no suggestion or motivation to combine the cited references to arrived at applicants claimed combination of features. Therefore, for at least these reasons, applicants assert that a *prima facie* case of obviousness has not been established. Accordingly, applicants respectfully request the pending rejection of Claim 49 under 35 U.S.C. § 103(a) be withdrawn.

#### Conclusion

In light of the foregoing amendments and remarks, applicants assert that the claims of the present application recite combinations of features neither suggested nor taught by the prior art.

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Therefore, applicants respectfully request early and favorable action and the allowance of all pending claims. If any further questions remain, the Examiner is invited to telephone applicants' attorney at the number listed below.

Respectfully submitted,

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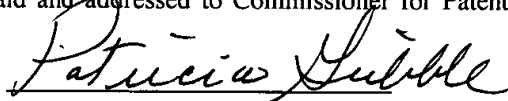


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